

**ECOLOGY OF NATIVE
GRASSLANDS ON VICTORIA'S
NORTHERN RIVERINE PLAIN**

ECOLOGY OF NATIVE GRASSLANDS ON VICTORIA'S NORTHERN RIVERINE PLAIN

Submitted by
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Summary

This thesis involved (a) an ecological study of the nature of existing grassland and grassy woodland remnants on the Northern Plain, (b) an historical study of the nature and distribution of treeless plain vegetation at the time of European settlement, and (c) an ecological study of the effects of disturbance on a long-grazed species-rich grassland remnant.

Community classification was undertaken using data collected from 196 least modified sites located on private property, roadsides, rail reserves, and other forms of public land.

Grasslands were found to be floristically distinct from grassy woodlands and their ecology linked to environmental (soils, rainfall and geology) and anthropogenic (post-settlement land management) factors.

The former distribution, nature and function of the original treeless plain vegetation were reconstructed from interpretation of historical records and analysis of remnant vegetation. Last century treeless plains occupied about 4000 km² mainly in the western half of the region, but today less than 2.5% remains (mainly on private property) as a consequence of cereal cropping, over-grazing and irrigation. The historical accounts indicate that treeless plain vegetation no longer exists in its original form as it has been transformed by the exclusion of fire, loss of native fauna and the introduction of exotic flora and fauna.

Native species richness was maintained under a conservative grazing regime by maintaining an open sward which provided for the persistence of annuals. The smaller annuals were favoured under these conditions because grazing pressure was proportional to plant size. Burning had a similar impact on structure to that of grazing, but reduced the abundance of annuals and may prove to have application as a conservation management tool. Soil disturbance reduced the abundance of all indigenous species and increased that of particular exotic grasses. Recovery from it was slow. Cultivation is regarded as the most significant threat to grassland remnants.

Statement of Authorship

Except where reference is made in the text, this thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma.

No other person's work has been used without due acknowledgment in the main text of the thesis.

This thesis has not been submitted for the award of degree or diploma in any other tertiary institution.

Paul Warrick Foreman
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